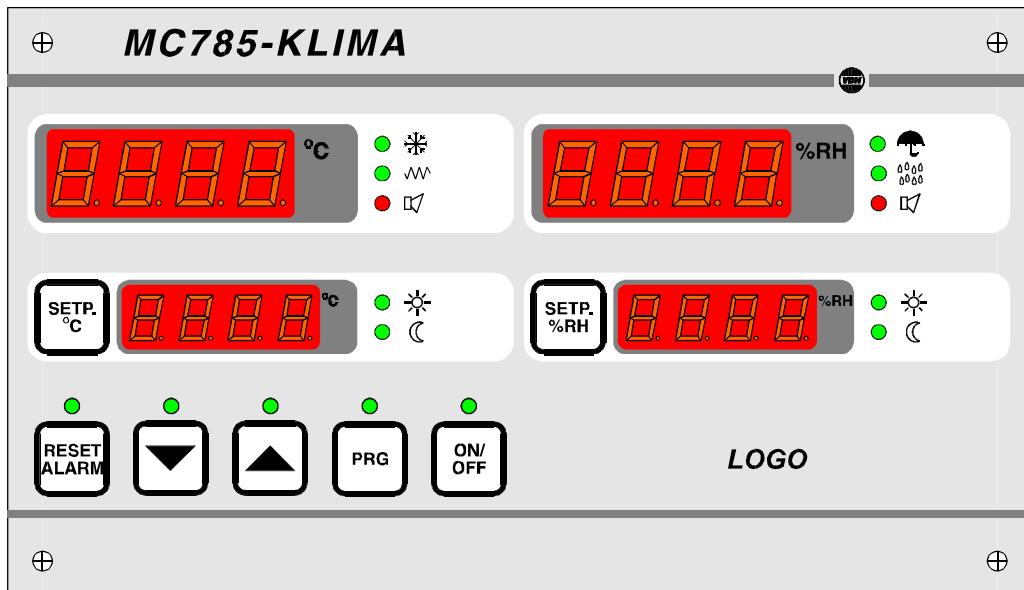


MC 785 KLIMA

0-100°C

User manual
(Wall and Panel mount)



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1. Technical specifications

General

Type	: MC 785 KLIMA
Wall mount version:	
Housing	: Grey plastic
Material	: Polystyrol 454h KG 2 natur BASF
Dimensions	: 213 x 180 x 85mm (whd)
Front	: Polycarbonate (IP-44)
Panel mount version:	
Housing	: Steel case for panel mount
Material	: Steel silver grey painted
Dimensions	: 217 x 155 x 85mm (whd)
Panel cut	: min. 208 x 146mm (wh)
Front	: Polycarbonate (IP-44)
Temperature range	: 0/+100°C per 0,1°C
Rel. humidity range	: 0/+100% RH per 0,1% RH
Power supply	: 230 Vac; 50/60 Hz (-10/+5%).
Power consumption	: 9 VA
Operating temperature	: -20/+50°C
Operating rel. humidity	: 10/+90 % RH not condensing
Accuracy	: ± 0,5 % of the range

Front

Display	: 4-digit digital display for measured temperature	
	4-digit digital display for temperature set point	
	4-digit digital display for measured RH	
	4-digit digital display for RH set point	
LED's	: COOL	= LED Relay cooling active
	: HEAT	= LED Relay heating active
	: DEHUM	= LED Relay dehumidifying active
	: HUM	= LED Relay humidifying active
	: 	= LED Alarm active (flashing)
	: 	= LED Day mode active
	: 	= LED Night mode active
Keys	: ON/OFF	= On/Off key controller
	: SET	= Set point push button
	: 	= Up key
	: 	= Down key
	: PRG	= Program key
	: RESET ALARM	= Alarm reset key

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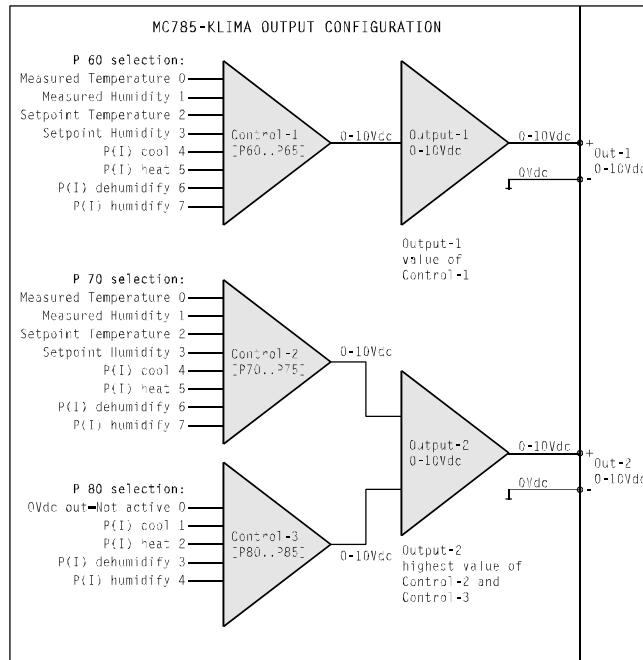
In- and Outputs

Sensors	: Temperature sensor (Pt-100, 3-wire to DIN/IEC 751) RH sensor (0/+1 Vdc = 0/+100% RH)	
Digital inputs	: Day/night input (potential free input contact) External alarm input (potential free input contact) Spare input (potential free input contact)	
Analog outputs	: 2x 0/+10Vdc, Rbmin 10Kohm, programmable.	
Relay outputs	: RY1 Extra relay (C/NO/NC, 250Vac/10A not inductive) Options extra relay (adjustable with parameter 20); P20=0 Fail safe alarm (normal C-NO is closed and during alarm C-NC is closed) P20=1 Control alarm (normal C-NC is closed and during alarm C-NO is closed) P20=2 Function Cooling P20=3 Function Heating P20=4 Function Dehumidifying P20=5 Function Humidifying	
	The following relays have a central common; RY2 Dehumidifying(NO, 250Vac/10A not inductive) RY3 Humidifying (NO, 250Vac/10A not inductive) RY4 Heating (NO, 250Vac/10A not inductive) RY5 Cooling (NO/NC, 250Vac/10A not inductive)	

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2. Functional specifications

The MC 785 KLIMA has the following control functions: cooling, heating, dehumidifying and humidifying. Further more the controller has an alarm relay, which is activated when the alarm levels are exceeded or a sensor is broken.



The MC 785 KLIMA has two analog outputs with a range of 0/+10Vdc, these are controlled by three controllers.

With Out-1 is controlled by Control-1 and Out-2 is controlled by the highest value of Control-2 and Control-3.

The functions of these controllers are programmable as measuring signal, set point signal or a P(I) control for the cooling, heating, humidifying or dehumidifying.

The controller has two digital input contacts.

The first contact is used as day/night input and the second contact is used as external alarm.

The selection of the above mentioned settings is done via the Internal Parameters.

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3. Control

During normal operation the upper displays show the measured temperature and measured rel. humidity and the lower displays show the temperature set point and the RH set point.

Changing the temperature set point.

Push the **SET** key next to the temperature set point display. The set point starts flashing. The set point can be changed with the **UP** and **DOWN** key. By pushing the **SET** key once again, the set point shows continuously in the display.

Is the MC 785 KLIMA in the day mode (**DAY** LED on) and should the night set point be watched or changed, push the **UP** or **DOWN** key and next on the **SET** key. The LED of the other mode flashes, the set point appears flashing in the display. Changing of the set point again with the **UP** or **DOWN** keys and acknowledged with the **SET** key.

In the same way the day set point can be watched or changed if the MC 785 KLIMA is in the night mode.

Changing of the RH set point.

Push the **SET** key next to the RH set point display. The set point starts flashing and can be changed with the **UP** or **DOWN** keys. By pressing the **SET** key again the set point appears continuously in the display.

If the instrument is in the day mode (**DAG** LED on) and the night set point needs to be watched or changed, push the **UP** or **DOWN** key and next push the **SET** key. The LED of the other mode flashes, the set point appears flashing in the display. Changing of this set point again with the **UP** or **DOWN** keys and acknowledged with the **SET** key.

In the same way the day set point can be watched or changed if the MC 785 KLIMA is in the night mode.

Resetting the alarm.

As soon as an alarm situation occurs and a failure message appears in the temperature display can, by pushing the **RESET ALARM** key, the alarm be reset.

The error message remains in the display, till the cause of the failure is solved.

Day/night input.

If the day/night input is closed, the MC 785 KLIMA switches from day to night mode. The night LED light. If the input is opened, the controller switches back to the day mode.

External alarm input.

If the external alarm input is closed, an alarm message appears in the display. The alarm relais is activated. By pressing the **ALARM RESET** key, the alarm relay can be reset. The error message remains in the display, until the external alarm input is opened again.

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4. Programming internal settings

By pressing the **PRG** and **RESET ALARM** key at the same time for more than 5 seconds, the Internal Parameter menu is entered. In the display appears a P with a number behind it. With the **UP** or **DOWN** key the required parameter is selected.

If the required parameter is reached, can by pushing the **PRG** key, the value of the parameter be watched. By simultaneously pressing the **PRG** with the **UP** or **DOWN** key, the value can be adjusted. After releasing the keys, the parameter number appears again in the display.

If during 30 seconds no key is touched, the display turn back to the normal operation mode.

Parameter table.

Number	Description	Range	Unit	Default
P 01	Differential cooling	0.1..15	°C	0.5
P 02	Offset cooling	-15..+15	°C	0.0
P 03	Differential heating	0.1..15	°C	0.5
P 04	Offset heating	-15..+15	°C	0.0
P 05	Diff. dehumidifying	0.1..15	% RH	1.0
P 06	Offset dehumidifying	-15..+15	% RH	0.0
P 07	Diff. humidifying	0.1..15	% RH	1.0
P 08	Offset humidifying	-15..+15	% RH	0.0
P 10	Offset temp. sensor	-10/+10	°C	0.0
P 11	Offset RH sensor	-15/+15	% RH	0.0
P 20	Function extra relay 0 = fail safe alarm 1 = control alarm 2 = cooling 3 = heating 4 = dehumidifying 5 = humidifying 6 = fail safe alarm not resettable 7 = control alarm not resettable 8 = extra relay; On when controller is on and off when controller is off	0..8	-	0
P 21	Diff. extra relay	0.1..15	-	0.5
P 22	Offset extra relay	-15..+15	-	0.0

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Number	Description	Range	Unit	Default
P 30	Minimum setting temperature set point	0..+100	°C	0.0
P 31	Maximum setting temperature set point	0..+100	°C	+100.0
P 32	Read-out above -10°C per 1°C	0 = No 1 = Yes	-	0
P 33	Read-out below -10°C per 1°C	0 = No 1 = Yes	-	1
P 34	Minimum setting RH set point	0..100	% RH	0
P 35	Maximum setting RH set point	0..100	% RH	100
P 36	Read out per 1% RH	0 = No 1 = Yes	-	0
P 40	Type temperature alarm 0 = No alarm 1 = Absolute alarm 2 = Relative to setp. Minimum alarm temp.	0..2	-	1
P 41	Maximum alarm temp.	0..+100	°C	0.0
P 42	Minimum alarm delay	0..+100	°C	+100.0
P 43	Maximum alarm delay	0..99	Minutes	0
P 44	Temperature control off at minimum alarm	0..99	Minutes	0
P 45	Temperature control off at maximum alarm	0 = No 1 = Yes	-	0
P 46	Temperature control off at maximum alarm	0 = No 1 = Yes	-	0
P 50	Type RH alarm 0 = No alarm 1 = Absolute 2 = Relative to setp. Minimum RH alarm	0..2	-	1
P 51	Maximum RH alarm	-100..100	% RH	0.0
P 52	Minimum alarm delay	0..100	% RH	100.0
P 53	Maximum alarm delay	0..99	Minutes	0
P 54	RH control off at minimum alarm	0..99	Minutes	0
P 55	RH control off at maximum alarm	0 = No 1 = Yes	-	0
P 56	RH control off at maximum alarm	0 = No 1 = Yes	-	0

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Number	Description	Range	Unit	Default
P 60	Function control-1>out1 0 = Measured temp. 1 = Measured RH 2 = Temperature setp. 3 = RH set point 4 = P(I) cooling 5 = P(I) heating 6 = P(I) dehumidifying 7 = P(I) humidifying	0..7	-	0
P 61	0 V output at	-100..+100	-	-0.0
P 62	10 V output at	-100..+100	-	+100.0
P 63	Proportional range	0.1..15	-	1.0
P 64	Offset prop. range	-15..+15	-	0.0
P 65	Interval value (999 give only P)	1..999	Minutes	999
P 70	Function control-2>out2 0 = Measured temp. 1 = Measured RH 2 = Temperature setp. 3 = RH set point 4 = P(I) cooling 5 = P(I) heating 6 = P(I) dehumidifying 7 = P(I) humidifying	0..7	-	0
P 71	0 V output at	-100..+100	-	0.0
P 72	10 V output at	-100..+100	-	+100.0
P 73	Proportional range	0.1..15	-	1.0
P 74	Offset prop. range	-15..+15	-	0.0
P 75	Interval value (999 gives only P)	1..999	Minutes	999
P 80	Function control-3>out2 0 = 0Vdc (not active) 1 = P(I) cooling 2 = P(I) heating 3 = P(I) dehumidifying 4 = P(I) humidifying	0..4	-	0
P 83	Proportional range	0.1..15	-	1.0
P 84	Offset prop. range	-15..+15	-	0.0
P 85	Interval value (999 gives only P)	1..999	Minutes	999
P 90	Analog out-1 as Pulse/Pause control	0 = No 1 = Yes	-	0
P 91	Pulse/Pause cycle-time1	5..240	Sec.	20
P 95	Analog out-2 as Pulse/Pause control	0 = No 1 = Yes	-	0
P 96	Pulse/Pause cycle time2	5..240	Sec.	20
P 100	Complete control off at external alarm	0 = No 1 = Yes	-	0
P 105	Software version nr.	-	-	-
P 106	Serial number	-	-	-
P 107	Production date	-	Year/w	-

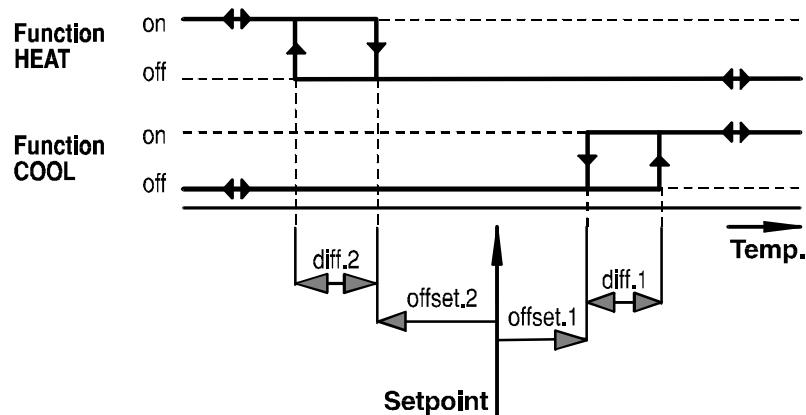
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5. Operation relay outputs

Operation of the cooling and heating.

The cooling (RY5) switches if the temperature is higher than **set point + offset cooling + differential cooling** and switches off if the temperature is lower than **set point + offset cooling**.

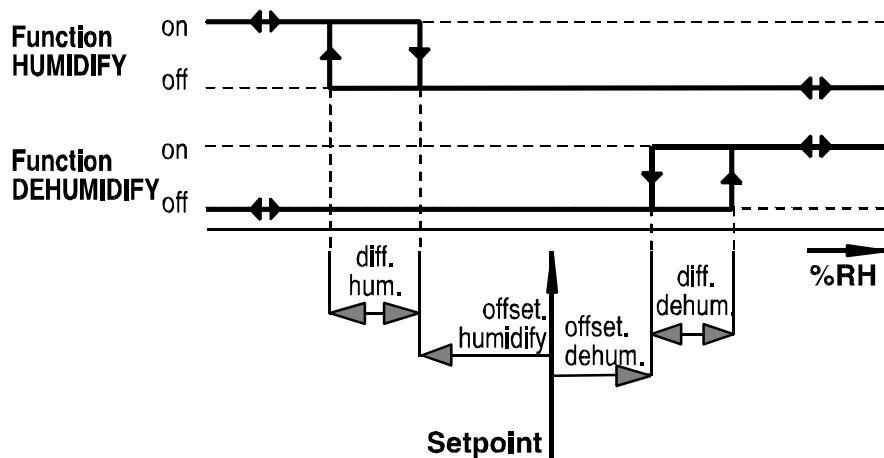
The heating (RY4) switches if the temperature is lower than **set point + offset heating - differential heating** and switches off if the temperature is higher than **set point + offset heating**.



Operation of the humidifying and dehumidifying functions

The dehumidifying Relay (RY2) switches on if the RH is higher than **set point + offset dehumidify + differential dehumidify** and switches off if the RH is lower than **set point + offset dehumidify**.

The humidifying Relay (RY3) switches on if the RH is lower than the **set point + offset humidify - differential humidify** and switches off if the RH is lower than **set point + offset humidify**.



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6. Sensor calibration

With parameters P10 and P11 can the temperature and RH sensor be calibrated. Indicates the temperature sensor e.g. 0,2°C too much, the offset (P 10) should be set at -0,2°C.

7. Alarms

If the extra relay is set as watch alarm (parameter P20=0), in normal mode the relay is on and drops during alarm. In this mode also an alarm is given if the power supply is lost. If the extra relay is programmed as control alarm (P20=1), in normal mode the relay is off and is switched on during alarm.

During alarm the alarm LED on the front flashes. Depending on the setting of the Internal Parameters the control will stop or continue.

An alarm can be caused by:

Temperature alarm :	tLO	= Minimum temperature alarm
	tHI	= Maximum temperature alarm
RH alarm :	rLO	= Minimum RH alarm
	rHI	= Maximum RH alarm
External alarm :	F1	= External alarm
Sensor failure :	E1	= Temperature sensor broken
	E2	= RH sensor broken

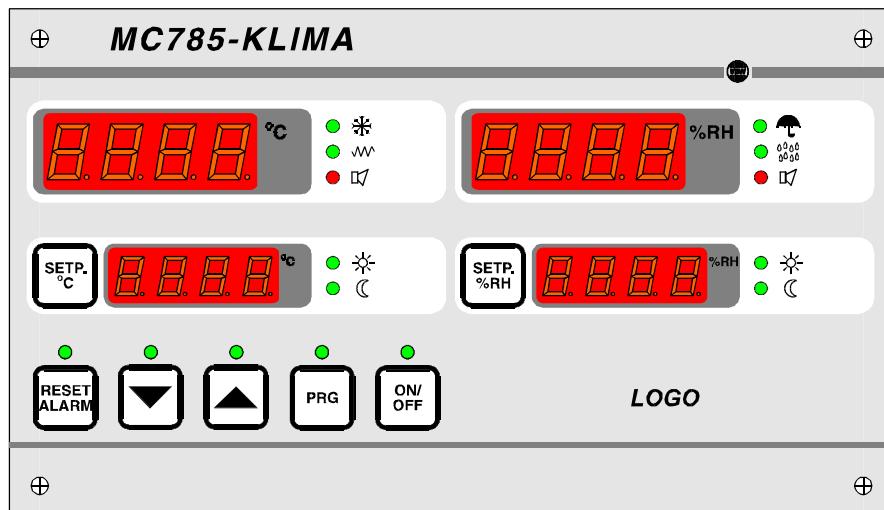
The temperature alarm messages tLO, tHI, E1 and external alarm message F1 are displayed in the temperature display (left top). The RH alarm messages rLO, rHI and E2 are shown in the RH-display (right top).

By pressing the **RESET ALARM** key the extra relay will, if configured as alarm relay, be reset. The error message remains during the failure in the display. Also the alarm LED will continue to flash.

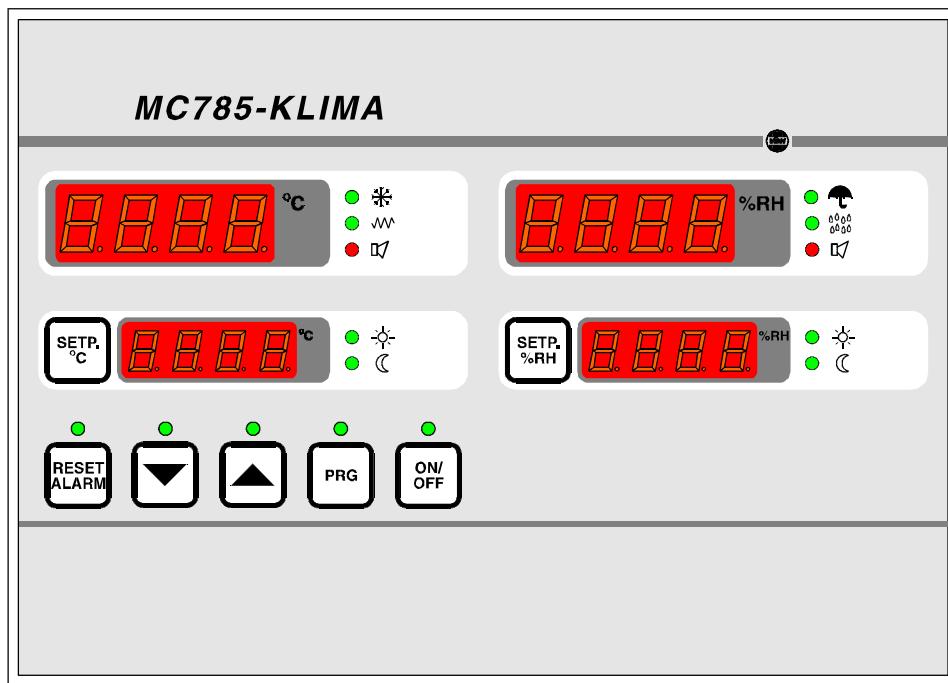
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8. Front

Front view MC 785 - KLIMA wall-mounting drawing 960581



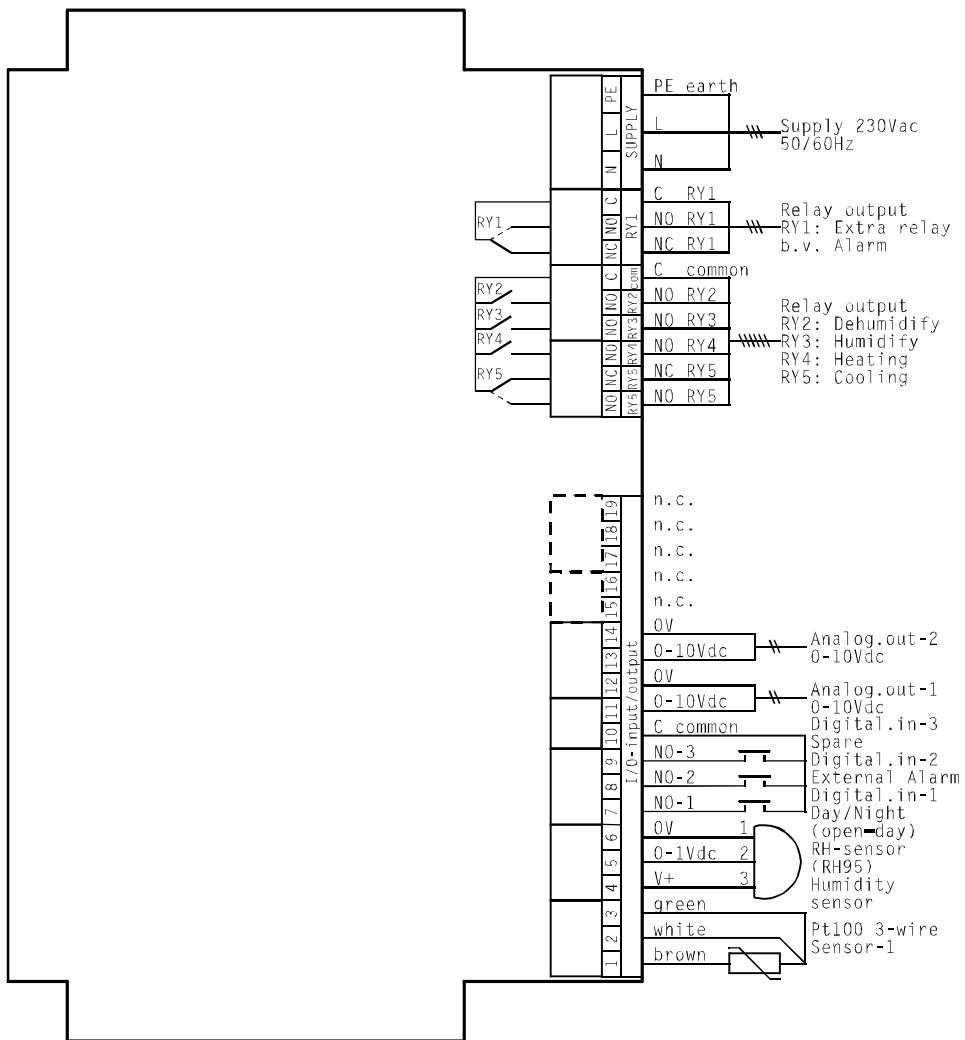
Front view MC785-KLIMA panel mounting drawing 961365



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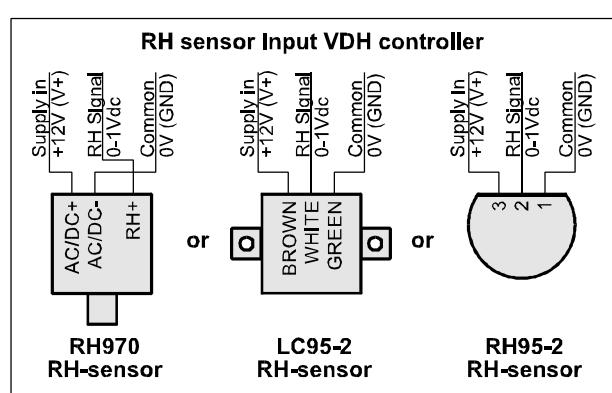
9. Connection diagrams

Connections MC 785 - KLIMA wall-mounting drawing 021743



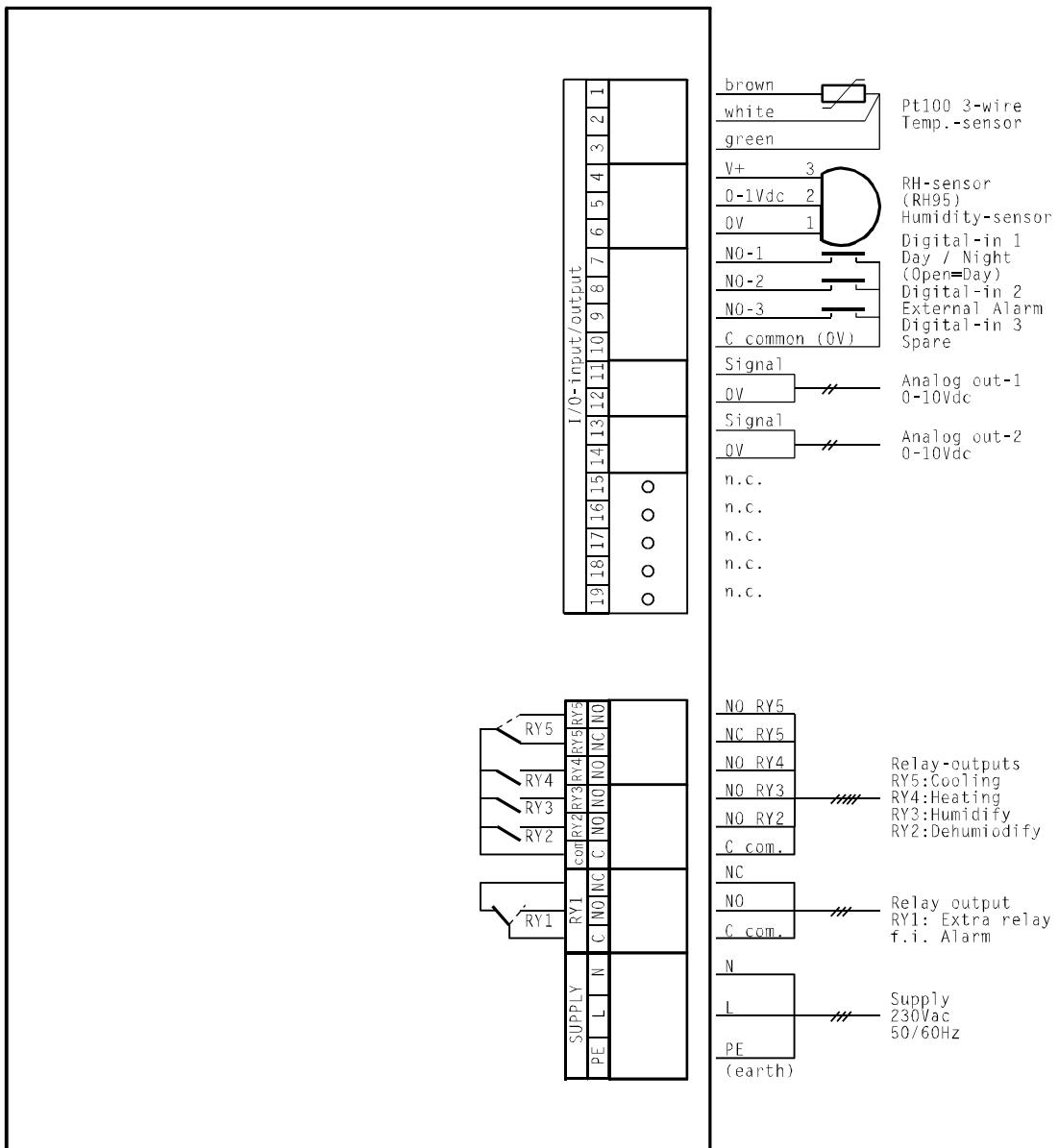
Several RH-sensors can be connected:

RH95-2, LC95-2 or RH970 humidity sensors
(Also for panel mounting)



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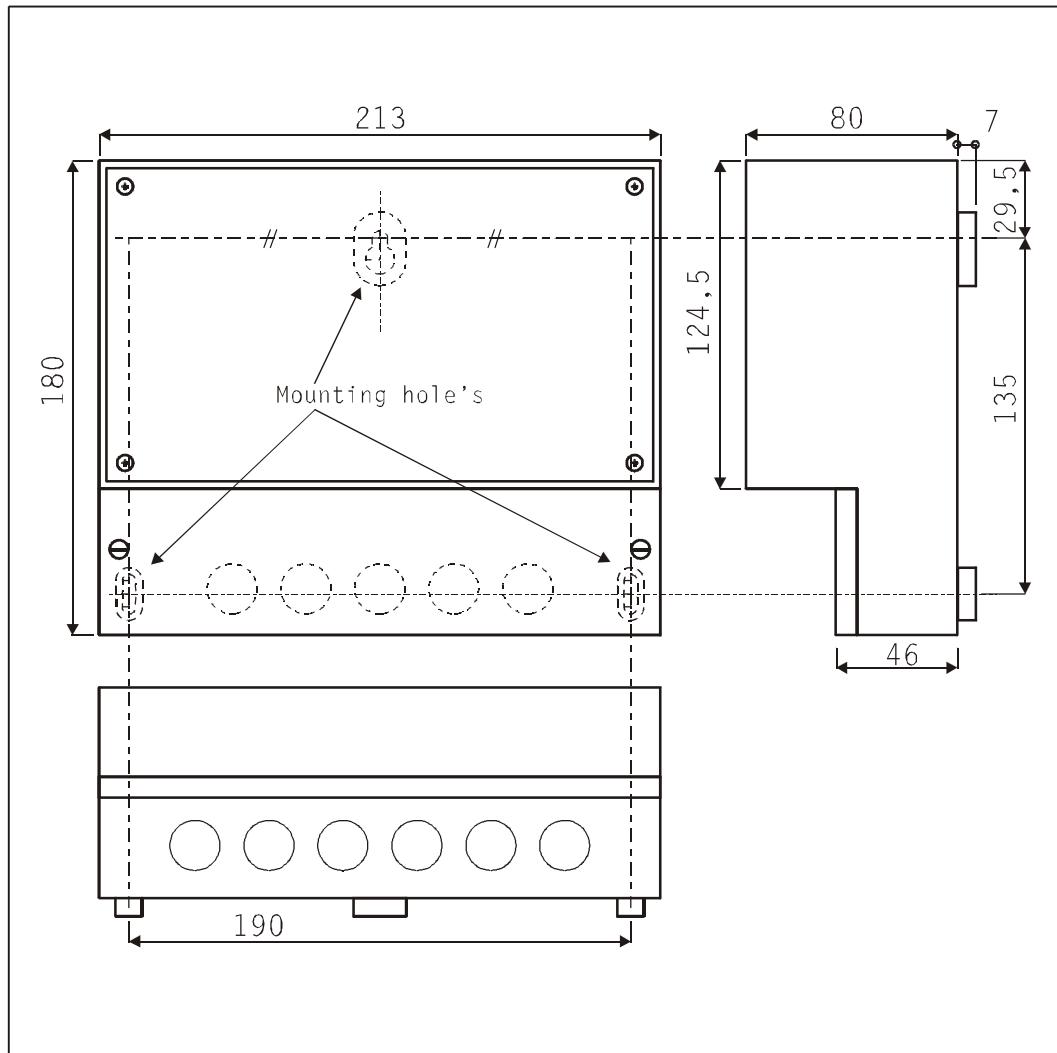
Connections MC785-KLIMA panel-mounting drawing 021742



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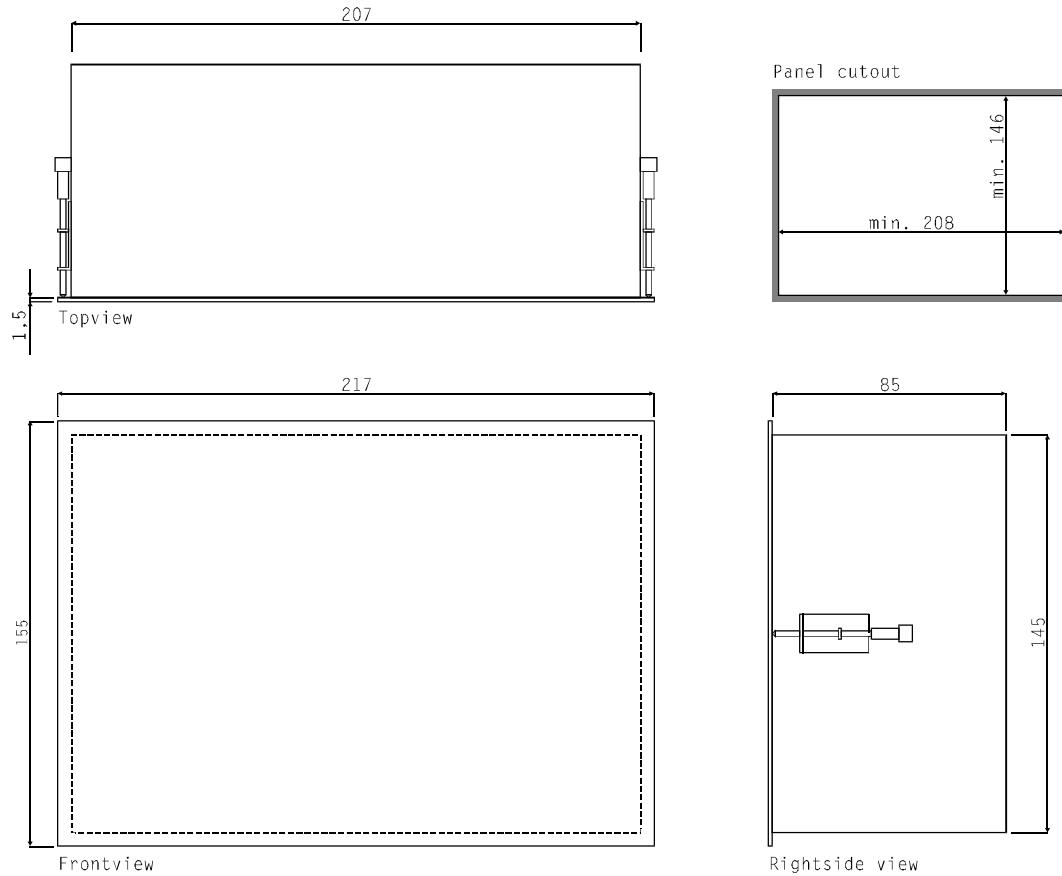
10. Dimensions

Dimensions MC785-KLIMA wall-mounting drawing 940024



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Dimensions MC785-KLIMA panel-mounting drawing 961271



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